near the midspan. During initial loading, DEMEC readings were taken in an effort to determine first cracking in the bottom flange of the girder and thus the corresponding cracking load. The gage length between the DEMEC points was 76.2 mm (3 in.) and each division of the DEMEC gauge measured a strain of 15.8 x 10^{-6}.

3.4 Test Procedure

The overall test program consisted of an initial static loading, followed by cycles of service loading (with intermittent overloading), and a final ultimate load test. Static load tests were intended to induce flexural cracking in the girder and to determine its initial flexural response before and after cracking. Several repetitions of static load tests were performed in order to obtain accurate initial load-deflection curves of the girder.

Fatigue loading was applied in segments of 100,000 cycles of service loading, followed by a static load test. After each 200,000 cycles of service loading with the follow-up static load test, 500 cycles of fatigue overload were applied to the girder with another follow-up static load test. Load-deflection curves were obtained before and after each 500 cycles of overload.

After the fatigue test, the girder was tested to failure to determine its load carrying capacity and to observe its behavior. Table 3.4 shows the loading history for the girder.

3.4.1 Tests for Initial Cracking

Static 0-A was the initial test of the girder to induce the flexural cracks. Before each static load test, the initial readings of potentiometers were recorded so that the displacement of the girder could be determined during and after the test. The load was applied slowly with displacement control at the rate of 0.25 mm/sec.(0.01 in./sec.) in increments of 5.08 mm (0.2 in.) of displacement to ensure that the initial cracking could